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SOFTWARE REQUIREMENTS SPECIFICATION FOR THE RUDRS CSCI

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1.0 SCOPE

1.1 IDENTIFICATION

This Software Requirements Specification (SRS) identifies and describes the requirements for the Navy Reserve Unit Data Resource System (RUDRS) Computer Software Configuration Item (CSCI) into the Global Command and Control System (GCCS) environment. RUDRS had been previously submitted in the Worldwide Military Command and Control System (WWMCCS) environment; it was originally hosted on the U.S. Atlantic Fleet (CINCLANTFLT) host, subsequently moved to the Chief of Naval Operations (CNO) host, and then rehosted at CICNLANTFLT as a result of the CNO-CINCLANTFLT WWMCCS host consolidation.

1.2 SYSTEM OVERVIEW

The overall purpose of the interface between GCCS and COMNAVRESFOR is to establish the capability to rapidly and automatically pass Naval Reserve Data to GCCS. This information supports the Joint Deployment System (JDS) in the planning and execution of its missions.

RUDRS provides for, and maintains, a database of Naval Reserve Force (NFL) data accessible to Fleet Commanders in Chief (FLTCINCS) via GCCS for use in both deliberate and execution planning. The NRFL Database Interface permits the introduction of data from the Reserve Training Support System (RTSS). This data is transferred via floppy disk to a remote GCCS workstation. The COMNAVRESFOR user then accesses Joint Operations Planning and Execution System (JOPES) Scheduling and Movement databases, also in GCCS, to conduct data validation checks of Geological Locations (GEOLOCs), and Unit Type Codes (UTCs). The validated NRFL is then made available for FLTCINC use.

1.3 DOCUMENT OVERVIEW

Section 1 provides a system identification and overview, and an overview of this document. Section 2 contains a list of documents referenced in this report. Section 3 defines the software requirements for RUDRS. Section 4 provides Quality Assurance provision. Section 5 provides delivery provisions and Section 6 provides a list of acronyms.

2.0 REFERENCED DOCUMENTS

2.1 GOVERNMENT DOCUMENT

a. Specifications

None

b. Standards

1. DOD-STD-2167A, Defense System Software Development,

29 February 1988.

c. Other Publications

None

2.2 NON-GOVERNMENT DOCUMENTS

a. Specifications

None

b. Standards

None

c. Other Publications

1. Software Design Document For The CINC-NRFL/WWMCCS Interface
2. Software Users Manual For The WWMCCS/CINC-NRFL Interface

3.0 SOFTWARE REQUIREMENTS

The following requirements reflect system functionality. Specific detailed processing statements have been included for the clarification of the requirement. Italicized statements are optional user definable parameters.

3.1 NRFL DATABASE ADMINISTRATION

RUDRS will provide NRFL administrative functions to control and manage the NRFL database.

3.1.1 CREATE and INITIALIZE

a. RUDRS shall provide the capability to create and initialize the NRFL database.

b. RUDRS shall password protect the capability to initialize the NRFL database.

3.1.2 DATA RETRIEVAL and STORAGE

a. RUDRS shall provide an automated interface for the retrieval of NRFL data to be used as input data.

b. RUDRS shall provide the capability to properly maintain a NRFL database containing a maximum of Configurable records.

c. RUDRS shall validate all NRFL data in accordance of the standard format rules of the CINC-NRFL Mobilization Report.

d. RUDRS shall persistently store all NRFL data to the NRFL database.

e. RUDRS shall sort the validated NRFL data prior to storage in the NRFL database. The data shall be sorted by AUIC, RUIC, UTC, GCC, POE, and AUIC LOC

f. RUDRS shall produce an on-line audit log of all transactions and errors when updating the NRFL database, and directed to the screen, disk file, or designated printer.

3.1.3 QUERIES

a. RUDRS shall provide a query capability to BROWSE the NRFL database.

b. RUDRS shall provide the ability to query the NRFL database on the following fields:
- **AUIC**
- **RUIC**
- **UTC**
- **POE**
- **AUIC LOC**

- **AUIC Long Name**
- **GCC**

c. RUDRS shall provide a ZOOM display capability accessible from the BROWSE. Invalid data fields shall be highlighted. Each display record shall be comprised of the following data elements:

- **AUIC**
- **RUIC**
- **UTC**
- **UNAME**
- **ORIGIN**
- **GCC**
- **POE**
- **AUIC Long Name**
- **RPN**
- **READY**
- **CITY**
- **STATE**
- **OFF ALLOW**
- **ENL ALLOW**
- **OFF ASSIGN**
- **ENL ASSIGN**
- **AUIC LOC**

d. RUDRS shall provide the capability to direct queries to the screen, disk file or designated printer.

3.1.4 EDITING

a. RUDRS shall provide on-line NRFL record editing available from a ZOOM display. Edit capabilities shall include DELETE, and MODIFY.

b. RUDRS shall perform automatic record validation immediately following an edit of a NRFL record.

3.1.5 REPORT GENERATION

a. RUDRS shall provide the capability to generate reports containing NRFL data.

b. RUDRS shall enable the user to generate listings of units from the NRFL database sorted by RUIC/AUIC, Force Description, UTC, and GCC.

c. RUDRS shall provide the capability to direct formatted reports to the screen, disk file or a designated printer.

3.1.6 AUDIT LOG REVIEW

a. RUDRS shall maintain an audit log of all NRFL update transactions.

b. RUDRS shall provide the capability to review the audit transactions.

c. RUDRS shall allow the user to specify the sequence (all entries, AUIC/RUIC combination, since date) in which to view the audit log.

d. RUDRS shall provide the capability to direct the view results to the screen or a designated printer.

3.1.7 TRANSACTION SUMMARY

a. RUDRS shall provide a Summary Transaction display to include the statistics on data files last processed. The display shall include the following:

- **Number of records in the database**
  - New Records
  - Deleted Records
  - Changed Records
  - Input Records from CINC-NRFL
  - Update Transactions
  - Records in Error
- **Last Date Changed**

3.2 CINC-NRFL DATABASE ADMINISTRATION

RUDRS will provide the following functions required in deliberate planning. RUDRS will provide an interface for proper retrieval and storage of CINC-NRFL data introduced via the NRFL Database located at COMNAVRESFOR New Orleans, LA. CINC-NRFL data will be downloaded and submitted for RUDRS comparison and validation. The result is the identification of new, updated, or deleted data and ensures all required fields contain data prior to the creation and maintenance of the Naval Reserve Force Library (NRFL) module.

3.2.1 CREATE

a. RUDRS shall provide the capability to create a CINC-NRFL database.

b. RUDRS shall use the following data extracted from each NRFL record as input to create the CINC-NRFL database:

- **AUIC**
- **RUIC**
- **UTC**
- **UNAME**
- **ORIGIN**

- **GCC**
- **POE**
- **AUIC Long Name**
- **RPN**
- **READY**
- **CITY**
- **STATE**
- **OFF ALLOW**
- **ENL ALLOW**
- **OFF ASSIGN**
- **ENL ASSIGN**
- **AUIC LOC**

c. RUDRS shall sort the newly created and converted CINC-NRFL data by AUIC (primary key) and RUIC (secondary key).

d. RUDRS shall sequentially process the old CINC-NRFL database and extract unit data when the GCC matches the GCC entered by the user.

e. RUDRS shall generate a report listing the updates to the new CINC-NRFL database, which shall be directed to the screen, disk file or a designated printer.

3.2.2 QUERIES

a. RUDRS shall provide the capability to run predefined queries against the CINC-NRFL database.

b. RUDRS shall provide the following predefined queries:

- **Report in RUIC sequence**
- **Report in AUIC sequence**
- **Report in GCC/RPN/AUIC sequence**
- **Report a total of on board versus allowance for CINCLANTFLT, CINCPACFLT, CONUS, USMC or ALL Selected Reserves depending on the GCC entered. Readiness information is also provided.**
- **Report a total of on board versus allowance by AUIC/RUIC for CINCLANTFLT, CINCPACFLT, CONUS, USMC or ALL (Selected Reserves) depending on the GCC entered. Readiness information is also provided.**

c. RUDRS shall provide the capability to direct the queries results to the *screen, disk file or a designated printer.*

3.2.3 CREATE TPFDD

a. RUDRS shall provide the capability to generate a TPFDD using the CINC-NRFL database as input.

b. RUDRS shall expect the user to supply the following parameters:

- ***Classification***

- **Force Requirement Number**
- **Gaining Command Code (optional)**
- ***Name/Location Code (mandatory if CNO)***
- **OPLAN Id**
- ***Output Device identification***

c. RUDRS shall process only CINC-NRFL records matching the supplied Gaining Command Code.

d. RUDRS shall sort the converted CINC-NRFL data by UTC, AUIC, RUIC.

e. RUDRS shall produce a report for all CINC-NRFL records with invalid GEOLOCs and UTCs that were not written to the TPFDD, and directed to the screen, disk file or a designated printer.

3.2.4 UPDATE TPFDD

a. RUDRS shall provide the capability to update a JOPES III TPFDD containing naval reserve requirements with new reserve data from the CINC-NRFL database.

b. RUDRS shall expect the following user supplied parameters:
- ***Gaining Command Code***
- ***Input CINC-NRFL TPFDD identification***
  Name/Location Code
- ***Output CINC-NRFL TPFDD media identification***
  Name/Location Code

c. RUDRS shall (1) Expect the Input TPFDD to be organized in standard TPFDD format, (2) create the Output TPFDD to mirror the Input TPFDD and update each Naval Reserve record where the AUIC and RUIC match the information in the CINC-NRFL record.

d. RUDRS shall not accept for update, non-Naval Reserve requirement records (input TPFDD). These records shall be written directly to the output TPFDD without change.

e. The following CINC-NRFL data elements shall be considered to update the input TPFDD record:
- **ORIGIN with CINC-NRFL**
- **AUTH PERS with CINC-NRFL personnel**
- **PAX with CINC-NRFL personnel**
- **Unit Name with CINC-NRFL unit name**
- **Critical Employment Indicator with CINC-NRFL GCC**

f. RUDRS shall produce a report for accepted input TPFDD records that are not found in the CINC-NRFL database and directed to the *screen, disk file or a designated printer*.

g. RUDRS shall produce a report for all records in the CINC-NRFL Database with the designated GCC that are not found in the TPFDD report of all records processed and directed to the screen, disk file or a designated printer.

h. RUDRS shall produce a report of all records processed.

3.2.5 UPDATE DESTINATION FILE

a. RUDRS shall provide the capability to update (ADD, CHANGE, DELETE) Destination file entries.

b. RUDRS shall access the GEOLOC file to validate each update to the Destination file.

3.3 RUDRS INTERFACE AND PHYSICAL REQUIREMENTS, AND SYSTEM QUALITY FACTORS

3.3.1 SPECIAL CONSIDERATIONS IN RUDRS FIELDING WITHIN GCCS

RUDRS is a site unique Navy application. Only integration testing will be performed by the OSF.

3.3.2 EXTERNAL INTERFACE REQUIREMENTS

RUDRS shall interface with the JOPES to download the GEOLOC and TUCHA tables.

RUDRS shall interface with the JOPES (System Services) to upload TPFDDs.

3.3.3 PHYSICAL REQUIREMENTS

This section is tailored out.

3.3.4 SYSTEM QUALITY FACTORS

This subsection specifies the applicable requirements pertaining to system quality factors.

3.3.4.1 Reliability.

The software will be developed using modern software engineering practices. These practices will include Object Oriented Development (OOD) of the software; designing in the Ada programming language; maximized use of validated, reusable software components; and maximized use of Commercial-Off-The-Shelf (COTS) software components.

3.3.4.1.1 Testing, Reviews, and Code Walk throughs

Software reliability will also be ensured via design reviews and code walk-throughs conducted prior to testing.

3.3.4.1.2 Software Reliability Metrics Data

Software reliability metrics data will be collected during the development process. These metrics will be analyzed so that the status, progress, and requirements compliance can be tracked and assessed.

3.3.4.2 Maintainability

An object oriented approach to the design will improve the ability of a software product to be adapted and enhanced. Object oriented programming yields easily maintainable software products.

3.4 DESIGN AND CONSTRUCTION

The following subsections provide a brief description of the design and construction requirements of the RUDRS system.

3.4.1 NAMEPLATES AND PRODUCT MARKING

Software media marking shall contains the following information as detailed below.

a. Name and version.

b. Media number (1 of 1).

c. Date of creation.

d. Hardware and Operating System.

e. Security Classification.

3.4.2 SAFETY

This section is tailored out.

3.4.3 HUMAN ENGINEERING

This subsection specifies human engineering requirements for the system.

RUDRS shall be interactive using a GCCS Workstation. The visible user interface to RUDRS consists of three types of displays:

(1) Menu - single screen display allowing for selection of one or more options

(2) Index Tableau - single or multi-page display allowing for multiple item selection

(3) Detail/Update Tableau - single or multi-page display that allows users to modify one or more data fields of a complex entity

3.4.4 SYSTEM SECURITY

System security will be provided by using GCCS procedures which restrict RUDRS access to those persons holding the appropriate security clearance level and "need to know." Workstations will be placed in secure areas, and only persons cleared to the level of Secret will be allowed access to the system. The primary means of control provided by the OS is the ability to set privileges for each specified user to access.

3.4.5 GOVERNMENT FURNISHED PROPERTY USAGE

This section is tailored out

3.5 DOCUMENTATION

A documentation set is specified by GCCS. The documents in this set include:

a. Delivery Letter to Configuration Management
b. Version Description Document (VDD)
c. Software Requirements Specification
d. Operators Manual (OM)
e. Software Test Description (STD)

Documents delivered for RUDRS will be in accordance with the approved task order, and GCCS directives..

3.6 PERSONNEL AND TRAINING

3.6.1 PERSONNEL

Personnel required for this application include:

a. An operator with RUDRS, RTSS and JOPES experience.
b. A GCCS administrator to manage RUDRS configurable parameters and scripts.

3.6.2 TRAINING

Within the scope of GCCS and individual CINC sites, training requirements are currently defined by GCCS. It is anticipated that training for RUDRS should, at least, have a core approach for learning how to navigate within the application. The following documentation will be used for the RUDRS core training:

- RUDRS Operator's Manual

3.7 PRECEDENCE

The user requirements specified herein are of equal precedence.

3.8 QUALIFICATION

3.8.1 VERIFICATIONS AND VALIDATIONS

Verification and validation of this specification will be evaluated in accordance with the qualification methods detailed in Section 4.

3.8.1.1 Verification.

Technical reviews and audits identified in the SDP are to be conducted in accordance with MIL-STD-1521B as tailored in the approved Software Development Plan (SDP). Additional verification may be done by GCCS.

3.8.1.2 Validation

RUDRS validation will be accomplished by informal testing against shall statements. Additional validation may be done by GCCS.

3.8.2 TEST CONSTRAINTS AND LOCATION OF TESTS

3.8.2.1 Test Constraints

RUDRS will be developed in an Unclassified environment using sanitized data.

3.8.2.2 Location of Tests

Testing will be conducted at three locations. PRC development lab at PRC McLean VA , the OSF, and at COMNAVRESFOR.

4.0 QUALITY ASSURANCE PROVISIONS

Compliance with this specification will be verified in accordance with the Requirements Cross-Reference Matrix in subsection 4.3. Compliance will be determined by one or more of the following qualification methods:

a. Inspection (I) - Verification by means of visual examination of the item. This will include review of descriptive documentation and comparison to the requirements without the use of special equipment or procedures.

b. Demonstration (D) - Verification by performing an observable functional operation not requiring elaborate test instrumentation or special test equipment.

c. Test (T) - Verification by exercising an application under all appropriate conditions and the collecting, analyzing, and processing of the accumulated data, including printed reports.

4.1 RESPONSIBILITY FOR INSPECTION

The Software Quality Assurance (SQA) staff will perform independent quality evaluations. Software Test Engineering (STE) will be responsible for testing the system's compliance against all specified requirements.

4.2 SPECIAL TESTS AND EXAMINATIONS

No special tests or examinations are required for this system.

4.3 REQUIREMENTS CROSS REFERENCE

This matrix (Table 4-1) correlates each system requirement in Section 3 to the quality assurance provisions specified in Section 4.

Table 4-1 - Requirements/Qualification Method Correlation

3.1.1	CREATE and INITIALIZE	a.	provide the capability to create and initialize the NRFL database.	I T
3.1.1	CREATE and INITIALIZE	b.	password protect the capability to initialize the NRFL database.	I T
3.1.2	DATA RETRIEVAL and STORAGE	a.	provide an automated interface for the retrieval of NRFL data to be used as input data.	I T
3.1.2	DATA RETRIEVAL and STORAGE	b.	provide the capability to properly maintain a NRFL database containing a maximum of Configurable records.	I T
3.1.2	DATA RETRIEVAL and STORAGE	c.	validate all NRFL data in accordance of the standard format rules of the CINC-NRFL Mobilization Report.	I T
3.1.2	DATA RETRIEVAL and STORAGE	d.	persistently store all NRFL data to the NRFL database.	I T
3.1.2	DATA RETRIEVAL and STORAGE	e.	sort the validated NRFL data prior to storage in the NRFL database. The data shall be sorted by AUIC, RUIC, UTC, GCC, POE, and AUIC LOC	I T
3.1.2	DATA RETRIEVAL and STORAGE	f.	produce an on-line audit log of all transactions and errors when updating the NRFL database, and directed to the screen, disk file, or designated printer.	I T
3.1.3	QUERIES	a.	provide a query capability to BROWSE the NRFL database.	I T
3.1.3	QUERIES	b.	provide the ability to query the NRFL database	I T
3.1.3	QUERIES	c.	provide a ZOOM display capability accessible from the BROWSE. Invalid data fields shall be highlighted. Each display record shall be comprised of the following data elements:	I T
3.1.3	QUERIES	d.	provide the capability to direct queries to the screen, disk file or designated printer.	I T
3.1.4	EDITING	a.	provide on-line NRFL record editing available from a ZOOM display. Edit capabilities shall include DELETE, and MODIFY.	I T
3.1.4	EDITING	b.	perform automatic record validation immediately following an edit of a NRFL record.	I T
				I T
3.1.5	REPORT GENERATION	a.	provide the capability to generate reports containing NRFL data.	I T
3.1.5	REPORT GENERATION	b.	enable the user to generate listings of units from the NRFL database sorted by RUIC/AUIC, Force Description, UTC, and GCC.	I T
3.1.5	REPORT GENERATION	c.	provide the capability to direct formatted reports to the screen, disk file or a designated printer.	I T
3.1.6	AUDIT LOG REVIEW	a.	maintain an audit log of all NRFL update transactions.	I T
3.1.6	AUDIT LOG REVIEW	b.	provide the capability to review the audit transactions.	I T
3.1.6	AUDIT LOG REVIEW	c.	allow the user to specify the sequence (all entries, AUIC/RUIC combination, since date) in which to view the audit log.	I T
3.1.6	AUDIT LOG REVIEW	d.	provide the capability to direct the view results to the screen or a designated printer.	I T

3.1.7	TRANSACTION SUMMARY	a.	provide a Summary Transaction display to include the statistics on data files last processed.	I T
3.1.7	TRANSACTION SUMMARY		The display shall include the following items:	I T
3.2.1	CREATE	a.	provide the capability to create a CINC-NRFL database.	I T
3.2.1	CREATE	b.	use data extracted from each NRFL record as input to create the CINC-NRFL database:	I T
3.2.1	CREATE	c.	sort the newly created and converted CINC-NRFL data by AUIC (primary key) and RUIC (secondary key).	I T
3.2.1	CREATE	d.	sequentially process the old CINC-NRFL database and extract unit data when the GCC matches the GCC entered by the user.	I T
3.2.1	CREATE	e.	generate a report listing the updates to the new CINC-NRFL database, which shall be directed to the screen, disk file or a designated printer.	I T
3.2.2	QUERIES	a.	provide the capability to run predefined queries against the CINC-NRFL database.	I T
3.2.2	QUERIES	b.	provide predefined queries:	I T
3.2.2	QUERIES	c.	provide the capability to direct the queries results to the screen, disk file or a designated printer.	I T
3.2.3	CREATE TPFDD	a.	provide the capability to generate a TPFDD using the CINC-NRFL database as input.	I T
3.2.3	CREATE TPFDD	b.	expect parameters:	I T
3.2.3	CREATE TPFDD	c.	process only CINC-NRFL records matching the supplied Gaining Command Code.	I T
3.2.3	CREATE TPFDD	d.	sort the converted CINC-NRFL data by UTC, AUIC, RUIC.	I T
3.2.3	CREATE TPFDD	e.	produce a report for all CINC-NRFL records with invalid GEOLOCs and UTCs that were not written to the TPFDD, and directed to the screen, disk file or a designated printer.	I T
				I T
3.2.4	UPDATE TPFDD	a.	provide the capability to update a JOPES III TPFDD containing naval reserve requirements with new reserve data from the CINC-NRFL database.	I T
3.2.4	UPDATE TPFDD	b.	expect parameters:	I T
3.2.4	UPDATE TPFDD	c.	(1) Expect the Input TPFDD to be organized in standard TPFDD format, (2) create the Output TPFDD to mirror the Input TPFDD and update each Naval Reserve record where the AUIC and RUIC match the information in the CINC-NRFL record.	I
3.2.4	UPDATE TPFDD	d.	not accept for update, non-Naval Reserve requirement records (input TPFDD). These records shall be written directly to the output TPFDD without change.	I T
3.2.4	UPDATE TPFDD	e.	data elements shall be considered to update the input TPFDD record:	I T
3.2.4	UPDATE TPFDD	f.	produce a report for accepted input TPFDD records that are not found in the CINC-NRFL database and directed to the screen, disk file or a designated printer.	I T
3.2.4	UPDATE TPFDD	g.	produce a report for all records in the CINC-NRFL	I T

			Database with the designated GCC that are not found in the TPFDD report of all records processed and directed to the screen, disk file or a designated printer.	
3.2.4	UPDATE TPFDD	h.	produce a report of all records processed.	I T
3.2.5	UPDATE DESTINATION FILE	a.	provide the capability to update (ADD, CHANGE, DELETE) Destination file entries.	I T
3.2.5	UPDATE DESTINATION FILE	b.	access the GEOLOC file to validate each update to the Destination file.	I T
3.3.2	EXTERNAL INTERFACE REQUIREMENTS		interface with the JOPES to download the GEOLOC and TUCHA tables.	I
3.3.2	EXTERNAL INTERFACE REQUIREMENTS		interface with the JOPES (System Services) to upload TPFDDs.	I
3.4.1	NAMEPLATES AND PRODUCT MARKING		Software media marking information.	I
3.4.3	HUMAN ENGINEERING		be interactive using a GCCS Workstation	I

5.0 PREPARATION FOR DELIVERY

Upon successful completion of integration testing at the OSF, PRC will ship the validated software to the sites.

6.0 NOTES

6.0.1 GLOSSARY

6.0.2 ACRONYMS

CDRL	**Contract Data Requirement List**
CNO	**Chief of Naval Operations**
COE	**Common Operating Environment**
COMNAVRESFOR	**Commander Naval Reserve Force**
CSCI	**Computer Software Configuration Item**
DISA	**Defense Information Systems Agency**
FLTCINCS	**Fleet Commanders-in-Chief**
GCCS	**Global Command and Control System**
GEOLOC	**Geographic Location**
JOPES	**Joint Operations Planning and Execution System**
NRF	**Naval Reserve Force**
OM	**Operators Manual**
OPLANS	**Operation Plans**
OSF	**Operational Support Facility**
RTSS	**Reserve Training Support System**
RUDRS	**Reserve Unit Data Resource System**
SPAWAR	**Space and Naval Warfare Systems Command**
SRS	**Software Requirements Specification**
TPFDD	**Time Phased Force Development Data**
TUCHA	**Type Unit Characteristics**
USACOM	**U.S. Atlantic Command**
VDD	**Version Description Document**